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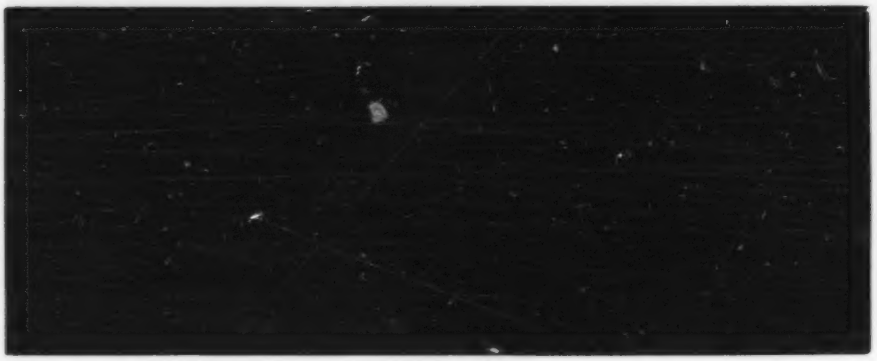

Keeping the agriculture and food industries competitive through Research, Development and Demonstration.

91-05731/

Final Report

D-90-CF-0782

Alfalfa Variety Trial Yield Data

Funded by
The Agriculture Development Fund

Saskatchewan Agriculture

Agriculture Development Fund

Project Information

ALFALFA VARIETY TRIAL YIELD DATA

#D-90-CF-0782

DISTRICT 34 A.D.D. BOARD

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Alfalfa Variety Trial Yield Data
#D-90-CF-0782

Summary

Yield data was taken from ten alfalfa varieties at fives sites in North West Saskatchewan. This was the first year of the alfalfa establishment. Generally, the tap rooted varieties outyielded the creeping rooted varieties. As expected, the tap rooted varieties exhibited faster regrowth.

Objective

The objective of the project was to obtain yield and protein data from alfalfa variety trials established in North West Saskatchewan in 1989.

Project Design

Six sites were selected for the alfalfa variety plots in 1989. The sites were located at Unity, Rosthern, Leask, Pierceland, Turtleford, and Lloydminster. None of the sites were irrigated.

Ten alfalfa varieties were seeded in one acre strips at each site. The varieties were Angus, Algonquin, Anchor, Beaver, Peace, Pioneer, Roamer, Rambler, Rangelander, Spredor 2, Thor, and Vernal.

All sites established in 1990 with the exception of the Lloydminster plot. The Lloydminster plot was worked down.

Yields were taken with a Mott Harvester rented from the Brightsand Forage Project. A summer student used the harvester to cut and collect a 2.083 ft. swath in a representative area of each variety. The length of swath ranged from 70 to 200 feet depending on the density of the stand. The forage was then weighed.

Two cuts were taken. The first cut was taken between June 25 and 28. The second cut was taken between August 13 and 17.

Regrowth was evaluated at three sites on July 17 and 18. The height of each variety was measured in 10 locations and an average height was obtained.

After the first cut was taken, the wet forage was sent to the Feed Test Lab for moisture and protein analysis. A microwave was then bought to take moisture analysis for the second cut forage. Protein analysis were not done on the second cut due to lack of budget.

Conclusions

Alfalfa Variety Plots *
1990 - First Cut
Tons/Acre Dry Matter

VARIETY	Leask	Pierceland	Rosthern	Turtleford	Average
ANGUS	0.52	0.43	0.67	0.23	0.46
BEAVER	0.66	0.27	0.61	0.19	0.43
ROAMER	0.73	0.17	0.62	0.17	0.42
RANGELANDER	0.56	0.22	0.70	0.20	0.42
THOR	0.60	0.20	0.67	0.19	0.42
SPREDOR 2	0.66	0.18	0.60	0.19	0.41
ALGONQUIN	0.52	0.31	0.62	0.17	0.41
PEACE	0.62	0.22	0.56	0.17	0.39
ANCHOR	0.43	0.38	0.57	0.16	0.38
PIONEER	0.56	0.18	0.62	0.15	0.38
RAMBLER	0.52	0.13	0.66	0.15	0.36
VERNAL		0.23	0.56	0.17	0.32

* listed in order of highest to lowest yield

Regrowth - Height in Inches
July 17-18

	Leask	Rosthern	Unity	Average
ANCHOR	13.2	13.7	15.8	14.2
VERNAL		15.6	12.8	14.2
ANGUS	13.8	13.3	15.4	14.2
ALGONQUIN	12.4	12.9	15.2	13.5
PEACE	14.6	12.8	12.0	13.1
PIONEER	12.6	13.2	12.4	12.7
THOR	12.8	12.3	13.0	12.7
BEAVER	12.2	12.1	12.2	12.2
SPREDOR 2	10.6	12.3	9.2	10.7
ROAMER	10.0	11.9	9.2	10.4
RANGELANDER	10.8	9.8	10.4	10.3
RAMBLER	9.6	11.1	10.2	10.3

Second Cut *
Tons/Acre Dry Matter

VARIETY	Leask	P'land	Rosthern	T'ford	Unity	Average
ANGUS	0.53	0.23	0.39	0.57	1.28	0.60
ANCHOR	0.44	0.18	0.38	0.47	1.35	0.56
PEACE	0.71	0.26	0.38	0.45	0.54	0.47
PIONEER	0.84	0.19	0.44	0.44	0.31	0.44
ALGONQUIN	0.43	0.11	0.36	0.34	0.95	0.44
THOR	0.80	0.10	0.34	0.52	0.41	0.43
BEAVER	0.61	0.14	0.39	0.38	0.64	0.43
RANGELANDER	0.49	0.16	0.45	0.43	0.60	0.43
RAMBLER	0.45	0.16	0.40	0.45	0.62	0.42
VERNAL		0.21	0.44	0.49	0.50	0.41
ROAMER	0.48	0.14	0.42	0.45	0.46	0.39
SPREDOR 2	0.49	0.17	0.38	0.50	0.30	0.37

* listed in order of highest to lowest yield

Total Yields *
First and Second Cut
Dry Matter ton/acre

	First Cut	Second Cut	Total
ANGUS	0.46	0.60	1.06
ANCHOR	0.38	0.56	0.94
BEAVER	0.43	0.43	0.86
PEACE	0.39	0.47	0.86
ALGONQUIN	0.41	0.44	0.85
THOR	0.42	0.43	0.85
RANGELANDER	0.42	0.43	0.85
PIONEER	0.38	0.44	0.82
ROAMER	0.42	0.39	0.81
RAMBLER	0.36	0.42	0.78
SPREDOR 2	0.41	0.37	0.78
VERNAL	0.32	0.41	0.73

* listed in order of highest to lowest yield

Alfalfa Variety Plots *
1990 - First Cut
Protein

	Leask	Pierceland	Rosthern	Turtleford	Average
RAMBLER	17.40	19.31	17.16	14.72	17.15
RANGELANDER	14.17	18.96	17.70	15.50	16.58
THOR	15.83	19.10	16.27	14.91	16.53
ROAMER	12.61	19.69	16.80	16.78	16.47
SPREDOR 2	14.06	18.44	16.94	16.41	16.46
PIONEER	16.32	17.59	16.10	15.20	16.30
PEACE	15.52	18.53	15.47	14.81	16.08
ALGONQUIN	15.24	12.83	19.24	16.63	15.99
ANGUS	15.40	14.49	16.48	17.51	15.97
ANCHOR	14.41	13.50	19.13	16.27	15.83
BEAVER	15.02	14.53	16.66	16.01	15.56
VERNAL		17.19	14.54	13.03	14.92

* listed in order of highest to lowest protein

Discussion and Recommendations

This was the first year of establishment, therefore it is too early to draw any conclusions. Generally, the tap rooted varieties outyielded the creeping rooted varieties. The tap rooted varieties also demonstrated quicker regrowth. There was no statistical analysis performed since this is just a demonstration project.

The absolute yields appear low particularly in the Leask and Rosthern sites where the stand was excellent. The Mott Harvester did not do a clean job of cutting and collecting the sample. Therefore, efforts will have to be made next year to improve the machine's cutting ability as well as to calibrate the machine.

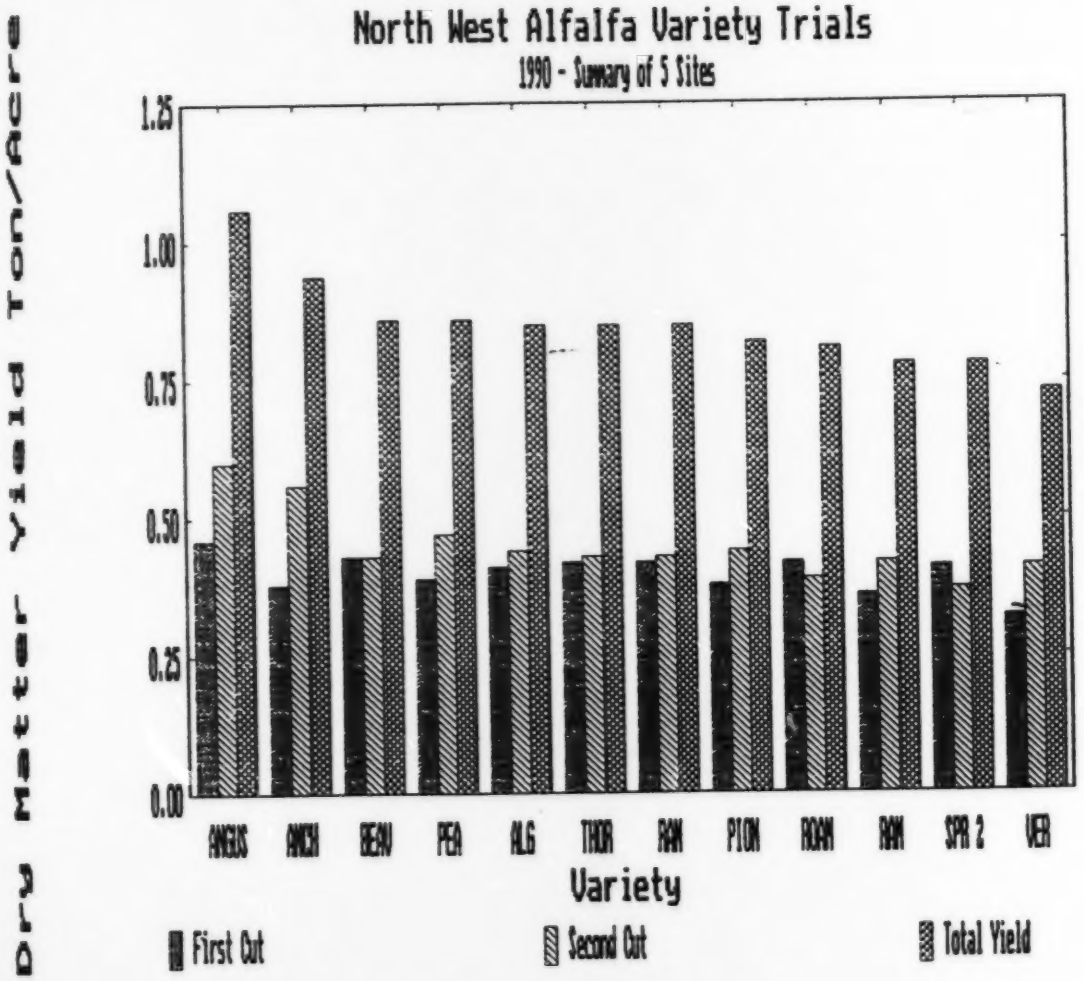
Some efforts were made to measure yield using a forage meter developed by the Fields Crop Branch of Alberta Agriculture (see Page 6). The limited results were not consistent with the results obtained with the Mott Harvester. However, this should be pursued further since the yields could be taken very quickly and would save the expense of moving the Mott Harvester from site to site.

The microwave worked quite well in drying the samples. Further efforts will be undertaken to fine tune the drying procedure. We also evaluated an electronic forage moisture probe from the Saskatchewan Crop Insurance Corporation. However, we found the probe to be very inaccurate at high moisture levels. The probe's moisture measurements were up to 29% lower than those measurements obtained from the Feed Test Lab.

Another demonstration application will be submitted for 1991. The budget should be increased to cover the technician's travel expenses. We were fortunate that we had access to a summer student hired by Environment and Public Safety who took the yield data.

Budget

Plot Signs, etc.	$74.62
Feed Testing	$518.00
Forage Dryer	$235.40
Mott Harvester Rental	$100.00
Total	$928.02



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October 1986

Using a Forage Meter For Estimating Hay and Pasture Yields

Field Crops Branch

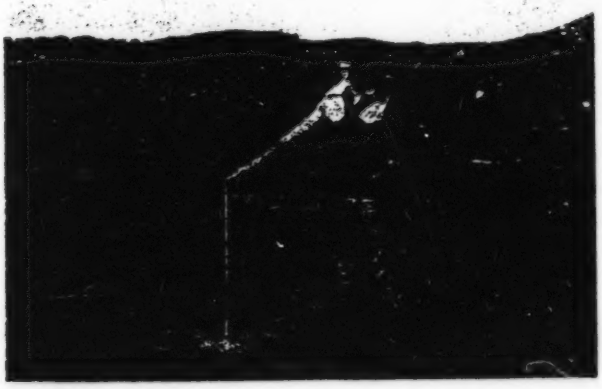
Experiments done in 1984 show that a simple forage meter can be used to estimate the amount of forage in a hay field or pasture without the labor and expense of clipping, oven drying and weighing. Ten to 50 observations with the forage meter across a hay or pasture field will provide an average forage meter height. This may be converted to dry matter yield by using figures 1 through 9, or tables 1 and 2 in this publication.

The forage meter is best used on trials where relative differences are measured. Examples would be fertilizer trials, measuring the effect of management, the rate of plant growth, or forage yield for sale purposes. The forage meter will predict forage yields on uniform forage stands of ± 5 per cent of the clip method with 95 per cent confidence, using the following guidelines:

Guidelines for Using a Forage Meter

1. Carefully identify the forage stand as to species and relative abundance of each.

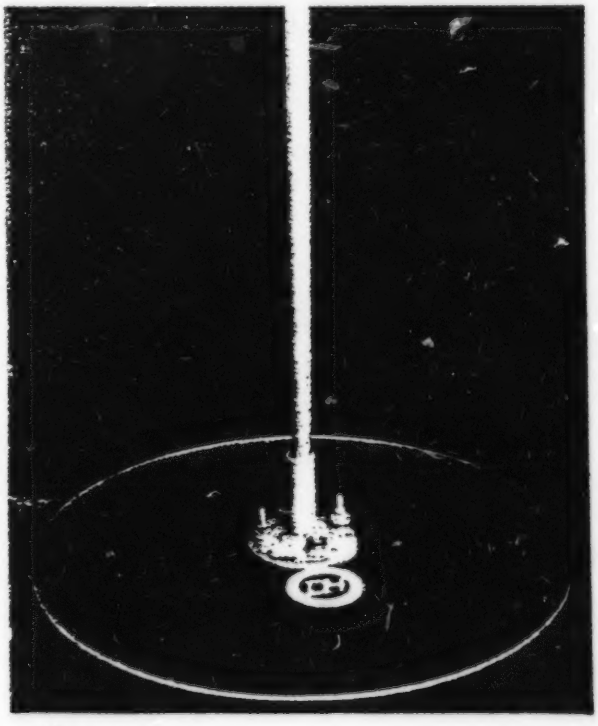
2. Use a forage meter covering a circular area of 0.2 m^2 with a weight of 1.5 kg (or large enough to cover wide row spacings with the same weight per unit area).



A forage meter in use.

3. Lower the forage meter until a contact is made with the tallest blade or head, then drop and allow it to settle for 10-15 seconds, then take the reading.

4. Sample 10 to 50 observations with the forage meter across a hay or pasture field. This will provide an average or mean forage meter height. This may be converted to dry matter yield by using figures 1 through 9, or tables 1 and 2 in this publication. The tables and figures were developed using a systematic sampling procedure. The number of observations (10-50) depends on the variation found in the hay or pasture field being sampled. A uniformly established forage crop will yield an acceptablemean or average meter height with 20-30 observations.



A forage meter

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